PTO 07-3661

Japanese Kokai Patent Application
No. Hei 10[1998]-231239

COSMETIC MATERIAL

Jun-ichi Nagaho and Hajime Murata

UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. APRIL 2007
TRANSLATED BY THE MCELROY TRANSLATION COMPANY

JAPANESE PATENT OFFICE
PATENT JOURNAL (A)
KOKAI PATENT APPLICATION NO. HEI 10[1998]-231239

Int. Cl.^{6}:	A 61 K 7/48 7/00
Filing No.:	Hei 9[1997]-363531
Filing Date:	December 16, 1997
Priority	
Date:	December 16, 1996
Country:	Japan
No.:	Japanese Patent Application No. Hei 8[1996]-353240
Publication Date:	September 2, 1998
No. of Claims:	5 (Total of 8 pages; FD)
Examination Request:	Not filed

COSMETIC MATERIAL
[Keshoryo]

Inventors:	Jyun-ichi Nagaho and Hajime Murata
Applicant:	591238604 Hoou Corp.

[There are no amendments to this patent.]

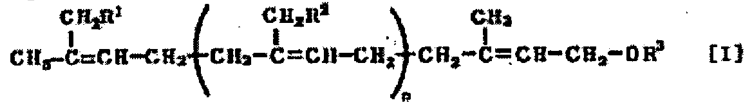
Claims /2*

1. A cosmetic material characterized by having a polyprenyl derivative represented by the following general formula [I] as an active component.

---

* [Numbers in the margin indicate pagination of the original foreign language text.]

[Chemical formula 1]



[I]

$$CH_3-\underset{}{\overset{CH_2R^1}{C}}=CH-CH_2\left(CH_2-\overset{CH_2R^2}{C}=CH-CH_2\right)_n CH_2-\overset{CH_3}{C}=CH-CH_2-OR^3 \quad [I]$$

(In the general formula [I], R^1 and R^2 are respectively a hydrogen atom or a hydroxyl group, they may be identical to or different from each other, and R^3 is a hydrogen atom, n is 1-4, and if n is 2-4, multiple R^2 groups may be identical or different. It is necessary that at least one of R^1 or R^2 is a hydroxyl group.)

2. The cosmetic material of Claim 1, wherein the group R^1 is a hydrogen atom, R^2 in the side chain at the 7th position in the structural formula is a hydroxyl group, R^3 is a hydrogen atom, and n is in the range of 1-3 in the general formula [I].

3. The cosmetic material of Claim 1, wherein the polyprenyl derivative is at least one kind of compound selected from a group comprising
7-hydroxymethyl-3,11,15-trimethyl-2,6,10,14-hexadecatetraene-1-ol,
11-hydroxymethyl-3,7,15-trimethyl-2,6,10,14-hexadecatetraene-1-ol,
7-hydroxymethyl-3,11-dimethyl-2,6,10-dodecatriene-1-ol,
7,15-dihydroxymethyl-3,11-dimethyl-2,6,10,14-hexadecatetraene-1-ol and
7-hydroxymethyl-3,11,15,19-tetramethyl-2,6,10,14,18-eicosapentaene-1-ol.

4. The cosmetic material of Claims 1-3, wherein the amount of the polyprenyl derivative to be compounded is in the range of 0.001-10 wt% of the total weight of the cosmetic material.

5. The cosmetic material of Claims 1-4, wherein the polyprenyl derivative represented by the general formula [I] is a compound extracted from a plant of genus Croton.

Detailed explanation of the invention

[0001]

Technical field of the invention

This invention pertains to a cosmetic material. In particular, it pertains to a cosmetic material containing a polyprenyl derivative having a skin reparative action as an active component and having an antimicrobial activity and excellent beautifying effect for the skin.

[0002]

Prior art

In general, the amount of skin secretions is reduced due to changes in body constitution, ageing and other physical conditions. Furthermore, as a result of excessive skin cleaning, dry skin is generated, and eventually it causes a problem of skin roughening with reduced skin luster, poor applicability of cosmetics, etc. If the skin tissue structure under this roughness is observed, the structure of the basal membrane and keratinous layer array are disturbed, hindering normal physiological functions.

[0003]

To improve said skin condition and achieve the formation and maintenance of healthy skin tissues, it is necessary to inhibit any reduction in the moisture content of the keratinous layer, and various means have been studied. For example, those proposed methods include inhibition of transepidermal moisture losses with a plugging agent showing good close contact properties with the skin; improvement of the hydration effect of the skin with a moisturizing agent such as organic acid salt, etc., having good moisture-absorbing power, furthermore, repairing of the keratinous layer of the skin by promoting its metabolism with vitamin, hormone, etc.

[0004]

However, those proposed methods could not increase the water-retention power of the keratinous layer sufficiently; thus, the effect improving the keratinous layer was poor; the skin experienced uncomfortable sensations such as oiliness, slippery feel, etc., with a plugging agent or moisturizing agent; and furthermore, in those methods using vitamins, hormones, etc., there was a safety problem.

[0005]

Objective of the invention

Therefore, considering the state of development of various cosmetic materials as described above, the objective of this invention is to provide a cosmetic material, which allows the skin to be moist by improving the problematic state of the keratinous layer of roughened skin, poor luster, fine wrinkles, etc., due to dryness of the skin, repairs the tissues preventing and improving skin roughening and has excellent skin-beautifying effect and safety.

[0006]

Means to accomplish the objective

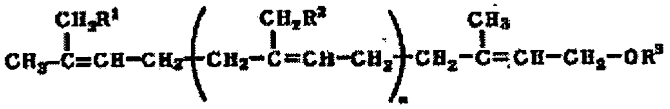
The inventors of this invention studied diligently to accomplish the objective described above, and as a result, they found that a polyprenyl derivative extracted from a plant of the genus Croton produced in Thailand had skin moisture-retaining and skin keratinous layer-improving functions with a tissue-repairing action, with at the same time antimicrobial activity and excellent skin-beautifying effect and was useful for daily skincare, and based on the findings, they arrived at this invention.

[0007]

Specifically, this invention pertains to a cosmetic material characterized by having a polyprenyl derivative represented by the following general formula [I] as an active component.

[0008]

[Chemical formula 2] /3



$$\mathrm{CH_3-\overset{\overset{CH_2R^1}{|}}{C}=CH-CH_2\left(CH_2-\overset{\overset{CH_2R^2}{|}}{C}=CH-CH_2\right)_n CH_2-\overset{\overset{CH_3}{|}}{C}=CH-CH_2-OR^3} \quad [I]$$

(In the general formula [I], R^1 and R^2 are respectively a hydrogen atom or a hydroxyl group, they may be identical to or different from each other, R^3 is a hydrogen atom, n is 1-4, and if n is 2-4, multiple R^2 groups may be identical or different. This requires that at least one of R^1 or R^2 is a hydroxyl group).

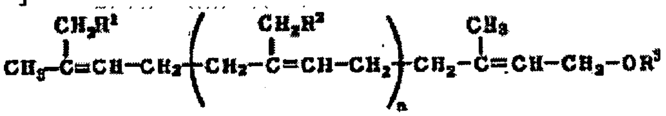
[0009]

Preferred embodiment of the invention

This invention is explained in detail as follows. The polyprenyl derivative used as an active component in the cosmetic material of this invention is a compound represented by the following general formula [I].

[0010]

[Chemical formula 3]



$$\mathrm{CH_3-\overset{\overset{CH_2R^1}{|}}{C}=CH-CH_2\left(CH_2-\overset{\overset{CH_2R^2}{|}}{C}=CH-CH_2\right)_n CH_2-\overset{\overset{CH_3}{|}}{C}=CH-CH_2-OR^3} \quad [I]$$

[0011]

In the general formula [I], R^1 and R^2 are respectively a hydrogen atom or a hydroxyl group, they may be identical to or different from each other, R^3 is a hydrogen atom, n is 1-4, and if n is 2-4, multiple R^2 groups may be identical or different, provided that at least one of R^1 or R^2 is a hydroxyl group.

[0012]

In the general formula [I], R^1 and R^2 are respectively a hydrogen atom or a hydroxyl group, they may be identical to or different from each other as long as at least one of R^1 or R^2 is a hydroxyl group. Furthermore, R^3 is a hydrogen atom.

[0013]

Furthermore, according to this invention, in the general formula [I], R^1 and R^2 may be respectively alkoxyl group with 1-10 carbon atoms, aliphatic acyloxyl group with 2-20 carbon atoms, aromatic acyloxyl group or aroaliphatic acyloxyl group, they may be identical or different to each other, R^3 may be an alkyl group with 1-10 carbon atoms, aliphatic acyl group with 2-20 carbon atoms, aromatic acyl group or aroaliphatic acyl group. This requires that at least one of R^1 and R^2 is a hydroxyl group, alkoxyl group with 1-10 carbon atoms, aliphatic acyloxyl group with 2-20 carbon atoms, aromatic acyloxyl group or aroaliphatic acyloxyl group.

[0014]

Specifically, R^1 and R^2 may be respectively aliphatic acyloxyl group such as alkoxyl group (metrhoxyl, ethoxyl, n-propoxyl, isopropoxyl, n-butoxyl, isobutoxyl, n-pentyloxyl, hexyloxyl, heptyloxyl, octyloxyl, nonyloxyl, decyloxyl group, etc.), alkanoyloxyl group (acetyloxyl, propionyloxyl, butylyloxyl, isobutylyloxyl, valeryloxyl, isovaleryloxyl, vivanoyloxyl [sic; pivaloxyl], caproyloxyl, 2-methyl-n-valeryloxyl, heptanoyloxyl, octanoyloxyl, 2-ethylhexanoyloxyl, nonayloxyl, decanoyloxyl, undecanoyloxyl, n-lauryloxyl, myristoyloxyl, pentadecanoyloxyl, palmitoyloxyl, stearoyloxyl group, etc.); aromatic acyloxyl group such as benzoyloxyl group with an alkyl group (methyl, ethyl, n-propyl, isopropyl group, etc.), or alkoxyl group (methoxyl, ethoxyl, n-propxyl, isopropoxyl group, etc.), on an aromatic ring; or aroaliphatic acyloxyl group (phenylacetoxyl, phenylbutenyloxyl, cinnamoyloxyl group, etc.), and they may be identical or different to each other.

[0015]

Furthermore, for R^3, there is an aliphatic acyl group such as alkyl group (methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, n-pentyl, hexyl, heptyl, octyl group, etc.); alkanoyl group (acetyl, propionyl, butylyl, isobutylyl, valelryl, isovaleryl, vivanoyl [sic], caproyl, 2-methyl-n-valeryl, heptanoyl, hexanoyl, octanoyl, 2-ethylhexanoyl, nonanoyl, decanoyl, undecanoyl, n-lauroyl, myristoyl, pentadecanoyl, palmitoyl, stearoyl group, etc.), or alkenoyl group (acryloyl, methacryloyl, crotonoyl, tigloyl, sorboyl, 10-undecenoyl, oleoyl, etc,), etc.; aromatic acyloxyl group such as benzoyl group of an aromatic ring with alkyl group (methyl, ethyl, n-propyl, isopropyl group, etc.), or alkoxyl group (methoxyl, ethoxyl, n-propoxyl, isopropoxyl, etc.), or aroaliphatic acyl group (phenylacetyl, phenylpropionyl, cinnamoyl group, etc.).

[0016]

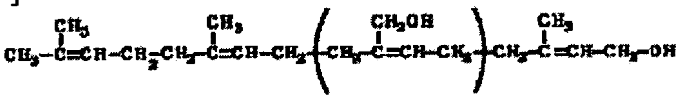
In a preferred compound represented by the general formula (I), R^1 is a hydrogen atom, /4 R^2 is a hydrogen atom or hydroxyl group, R^3 is a hydrogen atom, and n is 1-3. Provided, if n is 1, R^2 is a hydroxyl group, and if n is 2 or 3, at least one of R^2 is a hydroxyl group.

[0017]

In the optimal compound represented by the general formula [I], R^1 is a hydrogen atom, R^2 at the position 7 in the structural formula is a hydroxyl group, R^3 is a hydrogen atom, and n is 1-3. Therefore, the structural formula of a specific example of the optimal polyprenyl derivative useful for the cosmetic material of this invention is as follows.

[0018]

[Chemical formula 4]



$$CH_3-\overset{CH_3}{\overset{|}{C}}=CH-CH_2-CH_2-\overset{CH_3}{\overset{|}{C}}=CH-CH_2-\left(CH_2-\overset{CH_2OH}{\overset{|}{C}}=CH-CH_2\right)-CH_2-\overset{CH_3}{\overset{|}{C}}=CH-CH_2-OH$$

[1]

The analogs and derivatives of 7-hydroxymethyl-3,11,15-trimethyl-2,6,10,14-hexadecatraene-1-ol represented by the structural formula [1] can be prepared with the method disclosed in Japanese Patent Application Kokoku No. Sho 58[1983]-20933. For example, there are typically,

(1) 7-hydroxymethyl-3,11,15-trimethyl-2,6,10,14-hexatetraene-1-ol diacetate, dicaproate, dilaurate, dipalmitate, dicrotonate, dibenzoate, bis-p-methylbenzoate, bisphenylacetate or dicinnamate,

(2) 7-hydroxymethyl-3,11,15-trimethyl-2,6,10,14-hexadecatetraene-1-ol dimethyl ether,

(3) 7-hydroxymethyl-3,11-dimethyl-2,6,10-dodecatriene-1-ol diacetate or dibenzoate,

(4) 11-hydroxymethyl-3,7,15-trimethyl-2,6,10,14-hexadecatetraene-1-ol diacetate or dibenzoate

(5) 7,15-dihydroxymethyl-3,11-dimethyl-2,6,10,14-hexadecatetraene-1-ol, its triacetate or tribenzoate,

(6) 7-hydroxymethyl-3,11,15,19-tetramethyl-2,6,10,14,18-eicosapentaene-1-ol, its diacetate or dibenzoate, etc.

[0019]

In those compounds represented by the general formula [I], there are various geometrical isomers depending on the configuration of the double bonding, but their effects improving the keratinous layer of the skin show no special differences, and all of them are usable as an ingredient in the cosmetic material of this invention. In the general formula [I], those isomers and their mixtures are shown with a single formula, but this does not restrict the scope of this invention.

Incidentally, the isomers can be shown with E-Z notation according to the nomenclature proposed by International Union of Pure and Applied Chemistry (IUPAC) described in the Journal of Organic Chemistry, **35**, 2849 (1970).

[0020]

Polyprenyl derivatives extracted from plants of the genus Croton have been noted for their mucous membrane protective factor-enhancing actions and are used as an agent for treating gastritis, stomach ulcers, etc. However, no applications other than such a medical application has been known for polyprenyl derivatives. It is possible to extract this compound from plants of the genus Croton, Plau-noi (*Croton sublyratue Kurtz*, *Croton Columnaris Airy Shaw*), Plau-luat (*Croton Hutchinson janus Hosseus*) and Plau-yai (*Croton oblongifolius Roxb.*) produced in Thailand, by carrying out solvent extraction, and it is possible to isolate (E,Z,E)-7-hydroxymethyl-3,11,15-trimethyl-2,6,10,14-hexadecatetraene-1-ol, which is a diterpenediol compound. As a solvent usable for this extraction, any of those solvents conventionally used for extraction of plant components is usable, and specifically, there are, for example, water, alcohol (methanol, ethanol, etc.), ether (ethyl ether, isopropyl ether, etc.), halogenated hydrocarbon (methylene chloride, chloroform, etc.), acetate (methyl acetate, ethyl acetate, etc.), lower alkyl ketone (acetone, methyl ethyl ketone, etc.), and aromatic hydrocarbon (benzene, toluene, etc.). To collect the above-described compound from the extract, a conventional method for collecting a neutral component may be carried out, and this method may be combined with column chromatography or crystallization as a derivative. Specifically, to remove lipids from the extract, the extract or its concentrate is washed with a hydrocarbon such as n-hexane, after dissolving in non-water-miscible solvent such as benzene or ether, the solution is washed with an aqueous solution of sodium hydrogen carbonate, sodium carbonate or sodium hydroxide to remove the acid component, the organic solvent phase obtained is applied to column chromatography with silica gel, alumina, etc., as a packing material and single or a mixture of two or more organic solvents such as ethyl ether, benzene, etc., or mixture of these solvents and hydrocarbon solvent such as n-pentane, etc., as a developing solvent, and the solvent is allowed to evaporate from the eluate to obtain the desired compound of the structure described above.

[0021]

The desired compound prepared as described above may be purified further with conventional procedures such as derivative formation, vacuum distillation, etc.

[0022]

The formulation type of the cosmetic material of this invention is not especially limited, and any optional form may be used. Those formulation types previously used for this kind of cosmetic materials are usable, and for example, there are ointment, cream, emulsion, lotion, pack, etc.

[0023]

Furthermore, the cosmetic material of this invention may be compounded with various components conventionally used for medical drugs and cosmetics such as an aqueous component, oily component, powder component, surfactant, moisturizer, antioxidant, chelating agent, preservative, perfume, coloring agent, skin-beautifying agent other than the extraction component of this invention, etc., within the range of not inhibiting the effect of the polyprenyl derivative of this invention used as an active component. As a preferred embodiment of this invention, it is possible to provide a cosmetic in the form of toilet water, emulsion, cream, pack, etc., containing (E,Z,E)- 7-hydroxymethyl-3,11,15-trimethyl-2,6,10,14-hexadecatetraene-1-ol, which is a diterpenediol compound extracted from a pulverized Plau-noi (*Croton sublyratue Kurtz*, *Croton Columnaris Airy Shaw*) produced in Thailand with an organic solvent such as methanol, etc.

[0024]

Application example

This invention is explained specifically in detail with application and comparative examples as follows.

Production example

A polyprenyl derivative,
(E,Z,E)- 7-hydroxymethyl-3,11,15-trimethyl-2,6,10,14-hexadecatetraene-1-ol used as an active component in the cosmetic material of this invention was prepared with the following procedures.

[0025]

Plau-noi, which is a plant of the genus Croton produced in Thailand, is pulverized, 34 kg is used for extraction with 20 L of methanol by carrying out refluxing by heating 3 times. The methanol is allowed to evaporate from the extract solutions combined to obtain 673 g of an extract. The extract prepared is dissolved in 5 L of 90% methanol, washed with n-hexane, and subsequently, the methanol is allowed to evaporate. The residue after methanol distillation is suspended in 3 L of water, extracted with ether, the ether extract solution is washed with a 5% aqueous solution of sodium carbonate and dried with anhydrous sodium sulfate. The solvent is allowed to evaporate from the extract solution to obtain 120 g of an oily substance. The oily substance prepared is applied to a column packed with 2 kg of silica gel for adsorption, and the elution is carried out first with 10% ethyl acetate-containing benzene followed with 30% ethyl acetate-containing benzene. The fractions eluted with the 30% ethyl acetate-containing benzene are collected, and the solvent is allowed to evaporate to obtain 18 g of the desired compound in its oily state.

[0026]

Performance evaluation

The following sample (A) and sample (B) were used to evaluate skin tissue structure normalization effects. The results obtained are shown in Table 1.

Sample (A)

In 100 mL of 100% ethanol, 50 mg of the polyprenyl derivative prepared as described above [(E,Z,E)- 7-hydroxymethyl-3,11,15-trimethyl-2,6,10,14-hexadecatetraene-1-ol] was dissolved.

Sample (B)

100% Ethanol

[0027]

Evaluation method

As an experimental animal, hairless mice (13 month old, male) are used, and the skin on the back is irradiated with UV rays to generate inflammation. Subsequently, 10 μL of a sample is applied by coating once a day. After 5 weeks, a hematoxylin-eosin stained image of a frozen specimen slice of the skin tissue was evaluated under a microscope and observed by the naked eye based on the following evaluation standards. The results obtained are shown in Table 1. For comparison, the results obtained without any polyprenyl derivative compounded (ethanol alone) are also shown in the table.

+: normalized basal membrane structure and keratinous layer array

±: either basal membrane structure or keratinous layer array disturbed

–: unclear basal membrane structure and disturbed keratinous layer array

As apparent from the results shown in the table, the polyprenyl derivative of this invention was found to have an excellent effect normalizing the skin structure of hairless mice.

[0028]

Table 1

	試料(A)塗布群(n=10)	試料(B)塗布群(n=10)
−	0	8
±	2	2
+	8	0

Key:	1	Sample A-coated group (n=10)
	2	Sample B-coated group (n=10)

[0029]

Various formulations of the cosmetic material of this invention were prepared as follows, and they were used to carry out long-term continuous usage tests. Incidentally, the unit for the compounding proportion is wt% of the total weight of the cosmetic formulation prepared. In respective application examples, the (E,Z,E)- 7-hydroxymethyl-3,11,15-trimethyl-2,6,10,14-hexadecatetraene-1-ol prepared in the above production example was used.

[0030]

Application Example 1 Toilet water

The components in (A) are mixed for dissolution at room temperature, and those dissolved components in (B) are added to the solution of the components (A) for dissolution. The /6 polyprenyl derivative is used as a component (A).

[0031]

(A)	Ethanol	5.0
	Polyprenyl derivative	0.5
	Glycerol	5.0
	Polyoxyethylene (50)-hardened castor oil	1.0
(B)	Ethylparaben	0.05
	Perfume	0.05
	Citric acid	0.1
	Potassium dibasic phosphate	0.2
	Purified water	88.1

[0032]

Application Example 2 Toilet water

The components in (A) are mixed for dissolution at room temperature, components in (B) are also dissolved at room temperature and are added to the solution of the components (A) for dissolution.

[0033]

(A)	Polyoxyethylene (20) sorbitol monolaurate	1.5
	Sorbitol monolaurate	0.2
	Ethanol	10.0
	Polyprenyl derivative	3.0
	BHT	0.05
(B)	Glycerol	5.0
	Ethylparaben	0.1
	Sodium hyaluronate	0.05
	Citric acid	0.15
	Sodium citrate	0.1
	Purified water	79.85

[0034]

Application Example 3 Emulsion

After mixing the components (A), the mixture is heated to 70°C. The components (B) are also mixed, heated to 70°C and added to the mixture of the components (A) for emulsification. While cooling, the component (C) is added to prepare an emulsion.

[0035]

(A)	Polyoxyethylene (20)-hardened castor oil	1.5
	Coconut oil fatty acid monoglyceride	1.0
	Oleic acid triglyceride	7.5
	BHT	0.01
(B)	Glycerol	2.5
	Ethylparaben Polyprenyl derivative	0.05
	Purified water	87.24
(C)	Perfume	0.2

[0036]

Application Example 4 Emulsion

The components (A) and components (B) are respectively heated to 70°C while stirring for dissolution. After adding the components (A) to the components (B) and carrying out preliminary emulsification, the mixture is homogeneously emulsified in a homomixer for emulsification, and after emulsification, the mixture is cooled to 30°C while stirring.

[0037]

(A)	Beeswax	0.5	
	Cetanol	1.0	
	Vaseline	2.0	
	Squalane	4.0	
	Polyethylene glycol (25EO) monostearate	2.2	
	Glycerol monostearate	0.5	
	Butylparaben	0.1	
	BHT	0.01	
(B)	1,3-Butylene glycol	3.0	
	Propylene glycol	7.0	
	Carboxyvinyl polymer	0.2	/7
	Potassium hydroxide	0.2	
	Polyprenyl derivative	1.0	
	Purified water	78.29	

[0038]

Application Example 5 Cream

After mixing the components (A), the mixture is heated to 70°C. The components (B) are also mixed, heated to 70°C. The components (B) are added to the mixture of the components (A) for emulsification. After cooling to 35°C, the component (C) is added.

[0039]

(A)	Vaseline	5.0
	Squalane	10.0
	Cetanol	8.0
	Polyoxyethylene (20) oleyl ether	1.4
	Sorbitan monostearate	0.8
(B)	Ethylparaben	0.3

	Propylene glycol	5.0
	Polyprenyl derivative	0.1
	Purified water	69.2
(C)	Perfume	0.2

[0040]

Application Example 6 Cream

After mixing the components (A), the mixture is heated to 80°C. The components (B) are also mixed, heated to 80°C. The components (B) are added to the mixture of the components (A) for emulsification by stirring. The mixture is subsequently cooled to 35°C.

[0041]

(A)	Polyoxyethylene (20) cetyl ether	2.0
	Glycerol monostearate	10.0
	Fluid paraffin	10.0
	Vaseline	4.0
	Cetanol	5.0
	BHT	0.01
	2-Hydroxyl-4-methoxybenzophenone	0.5
	Butylparaben	0.2
(B)	Polyprenyl derivative	5.0
	Glycerol	5.0
	Purified water	58.29

[0042]

Application Example 7 Pack

The components (A) are mixed and dispersed at room temperature. The components (B) are added, and the mixture is uniformly dissolved.

[0043]

(A)	Poly(vinyl alcohol)	15.0
	Carboxymethylcellulose	5.0
	Purified water	40.0
(B)	γ-Tocopherol	0.02
	Ethanol	10.0
	Polyprenyl derivative	10.0

Glycerol	5.0
Purified water	14.98

[0044]

Long-term continuous use test

To prove how excellent the cosmetic material of this invention is with respect to the skin-beautifying effect, the cosmetic products prepared in Application Examples 1 and 2 were used to carry out usage tests to confirm their effects. For comparison, a cosmetic product was prepared with the composition of Application Example 1 with the polyprenyl derivative replaced with purified water. The following long-term usage test was carried out for those cosmetic products.

[0045]

The testers used were 40 Japanese women with dry facial skin and fine wrinkles divided to 20 persons per group. The cosmetic products of this invention were used on the faces in the group A for 8 weeks, and in the group B, the comparative example was used for the same period. The state of improvement or natural worsening of various evaluation items after 8 weeks were comparatively evaluated. The results obtained are shown in Table 2.

[0046]

/8

Table 2

評価要素		評価スケール			
		改善	やや改善	変化なし	自然増悪
乾燥感	A群	7	7	6	0
	B群	0	5	13	2
つやがない	A群	8	8	3	1
	B群	2	1	14	3
小じわ	A群	3	6	11	0
	B群	1	2	17	0
総合所見	A群	8	8	4	0
	B群	1	2	15	2

Key:	1	Evaluation item	
	2	Evaluation scale	
	3	Improvement	
	4	Slight improvement	
	5	No change	
	6	Natural worsening	
	7	Dry feeling	Group A
			Group B
	8	Lusterless	Group A
			Group B
	9	Fine wrinkles	Group A
			Group B
	10	Overall findings	Group A
			Group B

As is apparent from the results shown in the table, the cosmetic material of this invention showed better results than those obtained with the comparative cosmetic product, especially the dryness improvement and fine wrinkle improvement were found to be remarkable, and the excellent skin-beautifying effect was confirmed. Incidentally, the cosmetic material of this invention was also confirmed to have hardly any problems with respect to usage such as stickiness, etc.

[0047]

Effect of the invention

The polyprenyl derivative of this invention exhibits an effect of improving the skin tissue structure, shows the excellent skin-beautifying effect of dry skin improvement, fine wrinkle improvement, etc., and it is safely usable with no adverse effects on the skin.